

In-Hospital Stroke

The Good, The Bad, & The Ugly

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Stroke Teams do great work!

A LOT of data is available showing great strides in

- Patient identification of stroke via community education
- EMS identification that stroke is an EMERGENT condition
- ED team process to embrace stroke as a TIME SENSITIVE DX
- Hospital Administration supports Stroke Center & components
- Improved patient outcome, reduced mortality & morbidity

#1 Learned Lesson:

ORGANIZED STROKE CARE SUBSTANTIALY IMPROVES PATIENT OUTCOME

Stroke Teams can carry the work forward...

What about SECONDARY DIAGNOSIS of Stroke ...

- Estimated 4-17% (31-134 thousand/yr) occur in patients that are already in the hospital
- It is believed that these numbers are UNDER estimated due to many factors such as non-recognition/documentation
- Numerous are identified when coding is completed

TRUE or FALSE?

Improved patient outcomes resulting in optimized stroke care are typically associated with patients that experience stroke symptoms in the community and enter the hospital through the ED.



Think about this too...

Does this Standard apply to all stroke patients?

- TJC Standard PM.2(6): *“There is evidence that specific stroke performance measurement data, focused on the use of IV thrombolytic therapy, are evaluated through the quality improvement process and by the stroke team.”*

In -Hospital Stroke mechanism

- Cardioembolic 36%
- Iatrogenic-
 - Dissection
 - Arterial injury,
 - ? Neck positioning
- Large Vessel Thrombotic
 - CEA
 - Interventional catheterization induced embolism
- Hypoperfusion
- Fat Embolism

Elevated Risk In-Patients

- **Surgery**

- 54-68% of in-hospital strokes associated with surgery
- CABG risk
 - 2% if no prior Hx of stroke
 - 8.5% in pts with Hx of CVA

- **Immobility**

- Release of thrombogenic inflammatory mediators
- Direct arterial injury
- Discontinuation of antithrombotics

- **Medicine pts**

- Inflammation (fever/leukocytosis)
- Blood pressure (elevated diastolic or unstable)
- Dehydration
- Myocardial infarction (1% of all MI's complicated by CVA)

Higher inpatient stroke morbidity

- *DVT/PE*

(1.0 vs 6.4%, $p=0.01$)

- *Pneumonia*

(5.2 vs 15.9%, $p < 0.01$)

- *LOS* (4 vs. 8 days)

- *Poor outcome*

- *Functional impairment*

(36 vs. 61% with mRS > 4)

- *In-hospital case fatality*

(6.9 vs. 14.6%)

What might In-Hospital Stroke process learn from the ED?



*Q: From here on out- consider this an
interactive discussion.*

TRUE or FALSE?



What is the “Mantra” of ED Acute Stroke Teams ?

“TIME IS BRAIN”

This should be the mantra for
ALL acute stroke response



Who are the “players” in ED Stroke Alert?

Those responding emergently, to the patient's bedside and / or providing orchestrated care to reach a common goal.. INTERVENTION DECISION

*EMS, ED-Provider, ED-RN, Unit Secretary, ED Tech,
CT/Transporter, Neurologist, Radiologist,
Neurointervention, Pharmacist,
Stroke Coordinator ..
who or what else?*



How can this organized system be transposed to the inpatient arena?

- A. Education on Early Detection of Neuro Change for all hospital personnel
- B. Identification of bottlenecks and process steps with low reliability
- C. System modification to optimize in-hospital processes
- D. Standing protocol for nursing & Stroke Team Members
- E. Quality Improvement (QI) measures ongoing



In-Hospital Stroke Team orchestration:

aka Code Grey, RRT, MET, ACT , etc...

F.A.S.T. education for ALL

Identification there is a “problem”

Decision of need for HELP

Ease of Stroke Team Initiation

One call does it all

Who gets notified?

Who responds to the bedside?

What happens “behind the scene?”

What “tools” are needed?

**All of this needs to happen
sequentially, rapidly and
consistently**

Education Strategies

Detecting a “change” a lot harder than thought!

What is if isn't a stroke ? Will I look stupid?

Think Outside the Box!

Keep reminders in front of staff all the time

Seek out the each unit's “CHAMPION”



Training is solidified by repetition

Higher
volume

Streamlined

Smaller pool
of potential
team
members

Targeted QI
measures
easier



Bottlenecks with low reliability

Calling/paging physicians/specialists individually

Processes - INTRADEPARTMENTAL

Think Outside the Box!

Time Constraint

Seek out the each unit's "CHAMPION"



Identify WHERE minutes are lost: looking/waiting/calling/transporting



System Modification to Optimize Process

LEADER OF THE PACK

Addition of ancillary department to BLANKET PAGE

“Open” a CT Scanner when Stroke Code called

Stroke Code DRILL on every unit - repeatedly

Seek out the each unit’s “CHAMPION”



Streamlined & Efficient Process



"Leader of the Pack" - Grey Wolf



Protocols

Written with Medical and Nursing Input

Multiple Stroke Alert Team members NIHSS proficient

One person “Runs the Clock” when team initiated

Documentation of STROKE CODE

Seek out the each unit’s “CHAMPION”



Standard Work saves brain cells



Quality Improvement

Distinguish in-hospital strokes from patients who arrive via ED

Record which service they originated from

Record primary diagnosis and co-morbidities

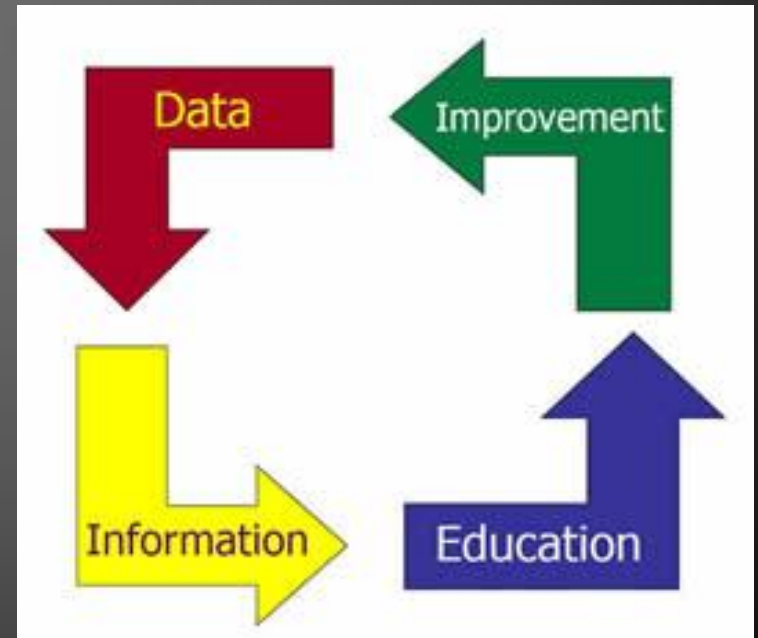
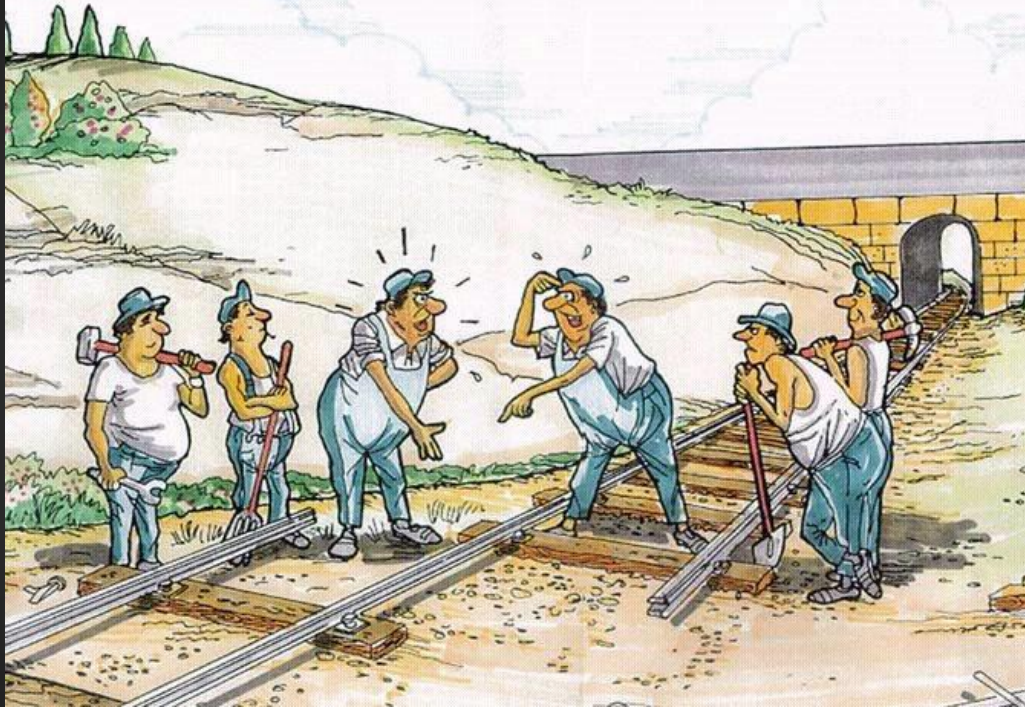
Log all time constraints the same as for ED Stroke Alerts

Include this data in the Stroke Center Scorecard & Reports



Quality Improvement works for all

Team Work



One more thought ...

MYTH:

- Physicians and nurses believe that Stroke Alert is only for those patients who qualify for tPA

TRUTH

- 10-15% of all strokes are hemorrhagic which also need emergency treatment
- Even if not tPA or Neurointervention Appropriate & complete secondary stroke prevention must be initiated!



Let's talk!

Issues & or Barriers

warrant potential solutions

Thank you for your participation! ●



Questions



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